



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : A61K 7/48		A1	(11) International Publication Number: WO 00/09082 (43) International Publication Date: 24 February 2000 (24.02.00)
(21) International Application Number: PCT/EP99/05028		(74) Agent: ELLIOTT, Peter, William; Unilever plc, Patent Dept., Colworth House, Sharnbrook, Bedford MK44 1LQ (GB).	
(22) International Filing Date: 14 July 1999 (14.07.99)			
(30) Priority Data: 9817817.1 14 August 1998 (14.08.98) GB		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
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(54) Title: COSMETIC COMPOSITION

(57) Abstract

An anhydrous foaming cleansing composition for topical application to the human skin, comprising an anionic surfactant, glycerine, polyethylene glycol, and a water insoluble benefit agent.

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COSMETIC COMPOSITION

This invention relates to cosmetic applications for topical applications to
5 the human skin. In particular, it relates to anhydrous cosmetic
compositions, with the capacity for self warming on application.

Anhydrous cosmetic compositions which provide a warming benefit on
application are as such known. For example, EP-A-27730 (Johnson
10 Company) describes a cosmetic composition, which may for example be a
hair treatment or hand treatment composition, which generates heat on
contact with water. In this application, heat generation is alleged to be
provided by the presence of polyethylene oxides, polypropylene oxides,
and derivatives thereof, and a 2 to 9 carbon atom alkaline glycol.
15 However, we have found that the formulation of compositions based on or
containing significant amounts of propylene glycol needs to be very
carefully controlled, since a number of propylene glycol based
compositions suffer from product separation on storage.

20 In terms of further teachings in the field, EP-A-586929 (Kao) describes a
two pack system which generates heat on the addition of water, and
produces a physiologically compatible salt that generates heat on mixture
with water. Also contributing to the heat felt by the user on hydration of
the product is the heat of hydration of polyethylene glycol.

25

Further, GB-A-1357000 (British American Tobacco Company) describes a
topical cosmetic composition comprising an anhydrous polyol and an

absorbent particulate filler material. Suitable polyols are said to include propylene glycol, glycerol, 1,3 butylene glycol, and polyethylene glycols having an average molecular weight of from 2 to 300 and from 1000 to 6000.

5

We have found that a particularly suitable cosmetic composition can be prepared for topical application, which composition is self heating, has good mildness and foaming properties, and which has further benefits not appreciated in the prior art.

10

Thus, according to a first aspect of the invention, there is provided an anhydrous foaming cleansing composition for topical application to the human skin, comprising an anionic surfactant, glycerine, polyethylene glycol, and a water insoluble benefit agent.

15

The surfactant contained in the composition may be any combination of surfactants, provided that it comprises an anionic surfactant and it provides the composition with a suitable level of foaming and mildness. As such, the surfactant component of the composition may comprise in 20 addition to anionic surfactants soaps, cationic, nonionic, zwitterionic and amphoteric surfactants, and mixtures thereof.

Suitable soaps include those having carbon chain lengths of C₈-C₂₄, be saturated or unsaturated, and have any appropriate cation, such as sodium, 25 potassium, ammonium or triethylammonium.

The composition according to the invention comprises an anionic surfactant, which is preferably chosen from alkyl sulphates, alkyl ether sulphates, alkyl sulphonates, alkyl aryl sulphonates, olefin sulphonates, acyl sarcosinates, acyl taurides, acyl isethionates, nonoalkyl 5 sulphosuccinates, dialkylsulphosuccinates, N-acylated α -amino acids, alkyl carboxylates, monoalkyl phosphates and dialkyl phosphates, and mixtures thereof. Specific examples of suitable anionic surfactants include:

10 alkyl sulphates, such as sodium lauryl sulphate [eg EMPICOL CX available from Albright and Wilson], and triethanolaminde lauryl sulphate [eg EMPICOL TL40/T, available from Albright and Wilson].

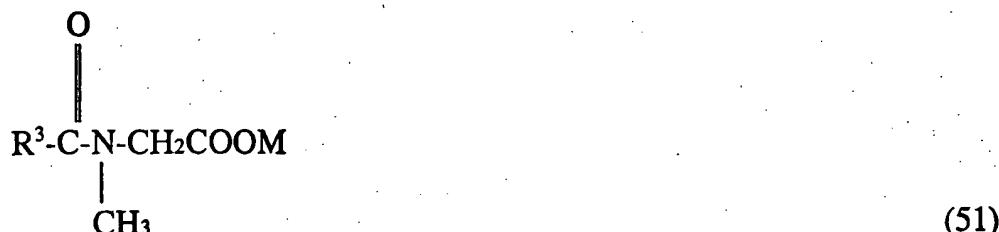
15 alkylether sulphates, such as sodium lauryl ether sulphate [eg EMPICOL ESB70, available from Albright and Wilson].

20 alkyl sulphonates, such as sodium alkane (C_{13-18}) sulphonate [eg HOSTAPUR SAS 30, available from Hoechst].

25 alkylaryl sulphonates, such as sodium alkyl benzene sulphonate [eg TEEPOL CM44, available from Shell].

olefin sulphonates, such as sodium olefin sulphonate (C_{5-18}) [eg HOSTAPUR OS, available from Hoechst].

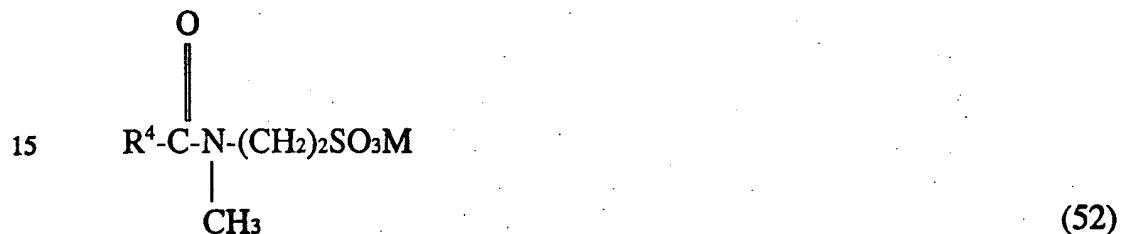
25 acyl sarcosinates, having the structure: (51)



5 where R^3 is chosen from C_{6-14} alkyl, and
 M is a counterion chosen from alkali metals, ammonium and substituted ammonium such as alkanolammonium.

An example of an acyl sarcosinate having the structure (51), is sodium
 10 lauryl sarcosinate [eg HAMPSOYL L-95, available from Grace].

acyl taurides, having the structure (52):



wherein R^4 is chosen from C_{8-18} alkyl

20 An example of an acyl tauride having the structure (52) is coconut methyl taurine [eg FENOPEN TC 42, available from International Specialty Products].

acyl isethionates, having the structure (53):



wherein R^5 is chosen from C_{8-18} alkyl.

5

An example of an acyl isethionate having the structure (53) is sodium acyl isethionate [eg JORDAPON C1, available from Jordon].

monoalkyl sulphosuccinates, having the structure (54):

10



15 where R^6 is chosen from C_{10-20} alkyl.

Examples of monoalkyl sulphosuccinates having the structure (54) include:

20 sodium lauryl sulphosuccinate [eg EMPICOL SLL, available from Albright and Wilson].

magnesium alkyl sulphosuccinate [eg ELFANOL 616 Mg, available from Akzo].

25 sodium lauryl ethoxysulphosuccinate [eg EMPICOL SDD, available from Albright and Wilson].

coconut monoethanolamide ethoxysulphosuccinate [eg EMPICOL SGG].

disodium lauryl polyglycoether sulphosuccinate [eg SURTAGENE S30, available from CHEM-Y].

5

polyethyleneglycol sulphosuccinate [eg REWOPOL SBFA 30, available from REWO].

dialkyl sulphosuccinates, having the structure (55):

10



where R^7 and R^8 are the same or different, and are chosen from C₆₋₁₄ alkyl.

15

An example of a dialkyl sulphosuccinate having the structure (55) is sodium dilauryl sulphosuccinate [eg EMCOL 4500, available from Witco].

20

N-acylated α -amino acids, such as sodium lauroyl glutamate [eg ACYLGUTAMATE LS-11, available from Ajinomoto Co Inc].

25

alkyl ether carboxylates, such as C₁₂₋₁₄O(EO)₄OCH₂CO₂Na [eg AKYPO RLM 38, available from Akzo].

monoalkyl phosphates and dialkyl phosphates, such as dioctyl phosphate.

Further examples of anionic surfactants (and of the other types of surfactants) are described in "Surface Active Agents and Detergents" 5 (vols. I and II), by Schwartz, Ferry and Bergh.

In certain embodiments, preferred anionic surfactants include alkyl ether sulphates, fatty acid soaps, alkyl sulphates, alkyl sulphonates, isethionic acid derivatives, and mixtures thereof. In certain embodiments, preferred 10 non-soap anionic surfactants may be C₈-C₂₂ alkyl unsubstituted isethionates.

The composition of the invention can also comprise a cationic surfactant. Suitable cationic surfactants are those with the structure (57):



where R¹, R², R³ and R⁴ each represents alkyl or aryl groups,

20 and X represents a halogen counterion.

Preferred cationic surfactants in accordance with structure (57) include:

25 Hexadecyl trimethyl ammonium chloride, such as Arquad 16, available from Akzo.

Dihydrogenated tallow dimethyl ammonium chloride, such as Arquade 2HT, available from Akzo.

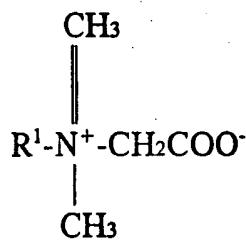
Dodecyl benzyl dimethyl ammonium bromide, such as Amoxyl Br1244,
5 available from Seppic.

Cocoamidopropyl trimethyl ammonium chloride, such as Empigen CSC,
available from Albright and Wilson.

10 The composition of the invention can also comprise an amphoteric surfactant. Suitable amphoteric surfactants are derivatives of aliphatic quaternary ammonium, phosphonium and sulphonium compounds, wherein the aliphatic radicals contain from 8 to 18 carbon atoms, and may be straight chain or branched, and further contain an anionic water
15 solubilising group, such as carboxyl, sulphonate, sulphate, phosphate or phosphonate.

Preferred amphoteric surfactants include:

20 Alkyl betaines, having the structure (58):



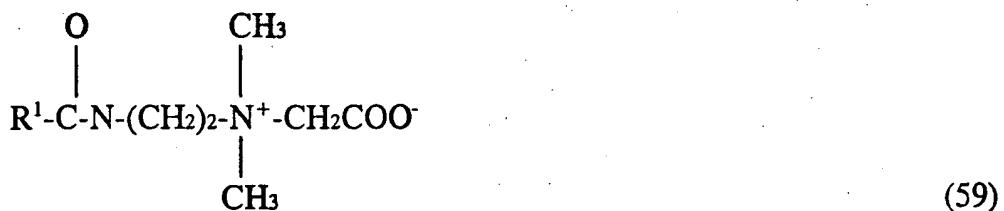
(51)

25

where R^1 is C_{1-16} alkyl.

An example of an alkyl betaine having the structure (58) is lauryldimethyl betain [eg EMPIGEN BB, available from Albright and Wilson].

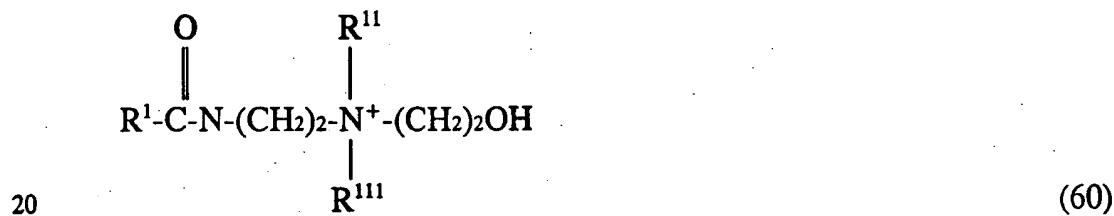
5 Alkylamidopropyl betaines, having the structure (59):



10

An example of an alkylamidopropyl betaine having the structure (59) is cocamidopropyl betaine [eg TEGOBETAIN L7, available from Goldschmidt].

15 Alkylamphoglycinates or Alkylamphopropionates having the structure (60):



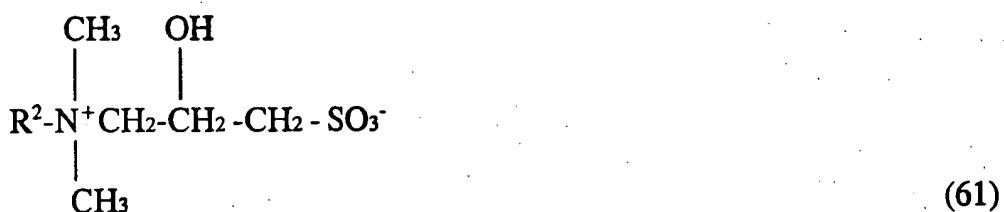
20

where R^{11} is chosen from H , CH_2COO^- and $(\text{CH}_2)_2\text{COO}^-$, and R^{111} is chosen from CH_2COO^- and $(\text{CH}_2)_2\text{COO}^-$

Suitable examples of compounds (60) are cocoamphoglycinate (available from International Specialty Products), and cocoamphopropionate.

Sultaines, having the structure (61):

5



10 where R^2 is chosen from C_{12-16} alkyl alkylamido groups.

An example of a sultaine having the structure (61) is cocamidopropylhydroxysultaine [eg CYCLOTERIC BET-CS, available from Alcolac].

15

The most preferred amphoteric surfactants are lauryl dimethyl betaine and cocamidopropyl betaine.

20 Such amphoteric surfactants can contribute to the foaming of the skin cleansing composition, while ameliorating the harshness of the anionic surfactant.

The composition of the invention can also comprise a nonionic surfactant.

25 Suitable nonionic surfactants include polyoxyethylene alkyl esters, polyoxyethylene alkyl ethers, and alkyl polyglycosides.

A suitable example of a polyoxyethylene alkyl esters is that having the CTFA designation Polysorbate 80 which is a mixture of oleate esters of sorbitol and sorbitol anhydrides, condensed with approximately 20 moles of ethylene oxide. Also suitable is Polysorbate 20 which is a mixture of 5 laurate esters or sorbitol and sorbitol anhydrides condensed with approximately 20 moles of ethylene oxide.

Polysorbate 80 and Polysorbate 20 are available commercially as TWEEN 80 and TWEEN 20 respectively, from ICI Americas.

10

Also suitable for use in the compositions of the invention is the polyethylene glycol ether of C₉₋₁₁ alcohol with an average of 8 ethoxy units, which is available commercially as NONIDET LE-8T or as 15 SYNPERIONIC 91-8T, and the polyethylene glycol ether of C₁₂₋₁₅ alcohol with an average of 9 ethoxy units which is available commercially as DOBANOL 25-9.

Particularly useful alkyl polyglycosides include the glycosides of glucose or glucose oligomers where the alkyl chain can be C₈₋₁₆ and the average 20 number of glucose units is 1 to 2. A suitable example is ORAMIX NS 10 which is the glucoside of C₁₀₋₁₂ fatty alcohol with an average of about 1.5 glucose units.

Conveniently the surfactant is present in the composition at a level of 5- 25 50% by weight. Preferably the level of surfactant in the composition is at least 10% by weight; preferably, the level of surfactant in the composition is less than 35% by weight. The anionic component of the surfactant

content of the composition can typically be 40-100% of the total surfactant content of the composition.

In a preferred embodiment, the composition may contain at least 5%,
5 more preferably at least 8% by weight, even more preferably at least 10% by weight of sodium cocoyl isethionate surfactant. In such compositions, a distinct improvement in sensory properties of the composition was perceived.

10 Conveniently, the blend of surfactants in compositions according to the invention is selected so as to enhance the lather volume and rinsability of the composition.

Preferably, the polyethylene glycols used in compositions according to the invention is a blend of polyethylene glycols having a variety of molecular weights; preferably, at least 50% of the polyethylene glycol blend used in compositions according to the invention has a molecular weight of less than 600, conveniently in the molecular weight of 200-600. However, higher molecular weight polyethylene glycols can usefully be used in the 20 composition provided that they are soluble in the formulation.

Conveniently, the polyethylene glycol used in the composition have a molecular weight of less than 5,000; preferably 95% or more of the polyethylene glycols in the composition have a molecular weight of less 25 than this.

Compositions according to the invention have been found to have particularly beneficial properties, in terms of their self heating properties on exposure to water, but also in relation to their stability. Further, cosmetic compositions according to the invention which comprise the 5 blend of glycerine and polyethylene glycol components have been found to be particularly suitable for delivery of components which are not soluble in water, and which may otherwise be difficult to deliver from an aqueous based composition. As such, compositions according to the invention have been found to be particularly suitable for delivery of these 10 components.

Other benefits which may be attained with compositions according to the invention include the provision of soft radiant skin after use, reduced skin oiliness, moisturization and mildness, as well as good rinsability.

15

An essential component of the composition is glycerine. Preferably, glycerine is present at a level of 5% to 25%, more preferably 10% to 20% by weight of the composition.

20 A further essential component of the composition is a blend of polyethylene glycols, which preferably comprise of at least 50% by weight of the polyethylene glycol component of polyethylene glycols having a molecular weight of 600 or less. The polyethylene glycol component of the composition may also comprise other, high molecular weight 25 polyethylene glycols, which may typically have a molecular weight up to about 6000. Preferably, the polyethylene glycol component of the

composition comprises from 20% to 70% by weight, more preferably from 25% to 50% by weight of the composition.

Compositions according to the invention are anhydrous; that is they
5 contain a maximum of 1% by weight of water.

In certain embodiments, a preferred optional component is propylene
glycol, though the level of propylene glycol is carefully controlled, since
excessive levels of propylene glycol may prejudice the stability of the
10 composition. Suitable levels of propylene glycol are typically 0.2-15%,
more typically 1-13% by weight of the composition.

As referred to above, compositions according to the invention may be
particularly suitable for the delivery of water insoluble components. Such
15 components include but are not limited to benefit agents such as skin
soothing agents, refreshing agents, healing agents, cooling agents, toning
agents, blood flow promoting agents, anti-inflammatory agents,
moisturising agents, anti-ageing agents, and sunscreen agents. A specific
example of a suitable sunscreen agent is Parsol MCX.

20

An advantage of compositions according to the invention is that they may
facilitate the solubilization and/or delivery of components which are
difficult to deliver from aqueous based compositions, and may be
considered insoluble in aqueous compositions. Typically, such benefit
25 agents may be present at levels of up to 20%, more preferably 0.1-10%,
even more preferably 0.5-8% by weight.

The product can take any convenient product form, and is preferably a liquid product. Conveniently, the product can be a facial foam or a shower cream. Conveniently the composition is not encapsulated, but is a free flowing liquid.

5

Products according to the invention have been found to provide suitable skin warming on application, which causes the pores in the skin to open more widely, and thus promote deeper cleansing.

10 The invention will now be described by way of example only, with reference to the following examples.

Example 1

The following composition provided a suitable self warming facial foam composition according to the invention.

5

	<u>Component</u>	<u>%</u>	<u>Tradename</u>	<u>Supplier</u>
	Propylene glycol	13.0	propylene glycol	Dow Chemicals
	Glycerine	14.0	glycerol	GBT
10	Potassium laurate/ myristate/stearate	22.0	Nonsoul LK-2 MK1/SK-1	NOF Corp
	PEG 300/400/600	29.0	Carbowax 300-600	Union Carbide
	PEG 60000 Distearate	3.0	Nionion DS-60HN	Nippon Oils & Fats
15	Ethylene glycol monostearate	8.0	Cutina EGMS	Henkel
20	Oleyl alcohol 20 mole ethyoxylate	5.5	Rhodasurf ON-870	Rhone Poulet
	Stearic acid	1.0	Pristerene 4900	Unichema
25	Sedaplant extract	1.0	Sedaplant Richter	Chemisches Laboratorium Dr Kurt Richter GmbH
30	Minor ingredients (perfume, etc.)	to 100.0		

Example 2

The following composition provided a suitable self warming facial foam composition according to the invention.

5

	<u>Component</u>	<u>%</u>	<u>Tradename</u>	<u>Supplier</u>
	Propylene glycol	13.0	Propylene Glycol	Dow Chemicals
10	Glycerine	16.0	Glycerol	LBT
	Potassium laurate	7.0	Nonsoul LK-2	NAF Corp.
15	Sodium cocoyl isethionate	11.0	Elfan AT 84G	Akzo
	PEG 300/400/600	29.0	Carbowax 300/400/600	Union Carbide
20	PEG 6000 Distearate	3.0	Nionion DS-60HN	Nippon Oil & Fats
	Ethylene glycol monostearate	8.0	Cutina EGMS	Henkel
25	Oleyl alcohol 20 mole ethoxylate	6.0	Rhodasurf ON-870	Rhone Poulenc
	Stearic acid	1.1	Pristerine 4900	Unichema
30	Sedaplant extract	1.0	Sedaplant Richter	Chemisches Laboratorium Dr Kurt Richter GmbH
35	Minor ingredients (perfume, etc.)	to 100		

CLAIMS

1. An anhydrous foaming cleansing composition for topical application to the human skin, comprising an anionic surfactant, glycerine, 5 polyethylene glycol, and a water insoluble benefit agent.
2. A cleansing composition according to claim 1, wherein the anionic surfactant is a C₈₋₂₂ alkyl unsubstituted isethionate.
- 10 3. A cleansing composition according to claim 2, comprising at least 5% of sodium cocoyl isethionate.
4. A cleansing composition according to any of the preceding claims, wherein the surfactant comprises 5-50% by weight of the composition.
- 15 5. A cleansing composition according to claim 4, wherein the composition comprises at least 10% by weight of surfactant.
6. A cleansing composition according to any of the preceding claims, 20 wherein the anionic surfactant comprises 40-100% by weight of the surfactants in the composition.
7. A cleansing composition according to any of the preceding claims, 25 wherein at least 50% by weight of the polyethylene glycol in the composition has a molecular weight of 200-600.

8. A cleansing composition according to any of the preceding claims, wherein the polyethylene glycol in the composition has a molecular weight of less than 5,000.
- 5 9. A cleansing composition according to any of the preceding claims, wherein the glycerine comprises 5-25% by weight of the composition.
- 10 10. A cleansing composition according to any of the preceding claims, wherein the polyethylene glycol comprises 20-70% by weight of the composition.
11. A cleansing composition according to any of the preceding claims, wherein the composition contains less than 1% by weight water.
- 15 12. A cleansing composition according to any of the preceding claims, wherein the composition additionally comprises 0.2-15% by weight propylene glycol.
- 20 13. A cleansing composition according to any of the preceding claims, wherein the composition additionally comprises an amphoteric surfactant.
14. A cleansing composition according to claim 13, wherein the amphoteric surfactant comprises at least 5% by weight of the composition.
- 25 15. A cleansing composition according to any of the preceding claims, wherein the benefit agent is selected from as skin soothing agents, refreshing agents, healing agents, cooling agents, toning agents, blood

flow promoting agents, anti-inflammatory agents, moisturising agents, anti-ageing agents, and sunscreen agents.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 99/05028

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K7/48

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 196 24 870 A (HENKEL KGAA) 2 January 1998 (1998-01-02) ---	
A	EP 0 261 754 A (SCHERER LTD R P) 30 March 1988 (1988-03-30) ---	
A	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 02, 30 January 1998 (1998-01-30) & JP 09 272894 A (S T CHEM CO LTD;GOING:KK), 21 October 1997 (1997-10-21) abstract --- -/-	

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Patent family members are listed in annex.

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Date of the actual completion of the international search

29 October 1999

Date of mailing of the international search report

08/11/1999

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 017, no. 052 (C-1022), 2 February 1993 (1993-02-02) & JP 04 264186 A (OSAKA AEROSOL IND CORP), 18 September 1992 (1992-09-18) abstract ----	
A	EP 0 027 730 A (JOHNSON CO LTD) 29 April 1981 (1981-04-29) cited in the application ----	
A	EP 0 586 929 A (KAO CORP) 16 March 1994 (1994-03-16) cited in the application ----	
A	GB 1 357 000 A (BRITISH AMERICAN TOBACCO CO) 19 June 1974 (1974-06-19) cited in the application -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 99/05028

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
DE 19624870	A 02-01-1998	AU 3257497	A	14-01-1998	
		WO 9749374	A	31-12-1997	
		EP 0910327	A	28-04-1999	
		NO 985963	A	18-12-1998	
EP 0261754	A 30-03-1988	GB 2192404	A	13-01-1988	
		AT 67086	T	15-09-1991	
		DE 3772915	A	17-10-1991	
JP 09272894	A 21-10-1997	NONE			
JP 04264186	A 18-09-1992	NONE			
EP 0027730	A 29-04-1981	JP 56057711	A	20-05-1981	
		JP 56077216	A	25-06-1981	
		AU 6346880	A	02-07-1981	
EP 0586929	A 16-03-1994	DE 4227203	A	07-10-1993	
		AT 110955	T	15-09-1994	
		DE 69300008	D	13-10-1994	
		DE 69300008	T	26-01-1995	
		JP 7069835	A	14-03-1995	
		US 5538720	A	23-07-1996	
GB 1357000	A 19-06-1974	DE 2145032	A	06-04-1972	
		FR 2106584	A	05-05-1972	
		IE 36942	B	30-03-1977	
		ZA 7106230	A	28-06-1972	